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IN THE UNITED STATES PATENT OFFICE

In re Application of
Naoya Isoda
Masahiko, Enoyoshi

App. No.: 10/064508
Filed: July 23, 2002
Conf. No.: 6620
Title: ENGINE CONTROL METHOD AND DEVICE FOR A VEHICLE
Examiner: T. Lewis
Art Unit: 3618

I hereby certify that this correspondence and all marked attachments are being deposited with the United States Patent Office via fax to (703) 872-9306 on:
September 13, 2004
Ernest A. Beutler
Reg. No. 19901

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANTS' SUBSTITUTE BRIEF

Dear Sir:

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that would have a bearing on or be affected by the decision in this appeal.

REAL PARTY IN INTEREST

In addition to the inventor, the real party in interest is his assignee, Kabushiki Kaisha Moric, a Japanese corporation.

STATUS OF CLAIMS

Claims 1-20 remain in this application and claims 1-9, 11 and 13-20 are before the Board on appeal. The Examiner has also noted that claims 13-20 would be allowed if appellant would file a terminal disclaimer to overcome his rejection on the judicially created doctrine of double patenting A clean copy of the rejected claims appears in the Appendix to this brief as well as allowed claim 12, upon which several of the rejected claims depend, for the convenience of the Board.

STATUS OF AMENDMENTS

No amendment had been proposed subsequent to the Final Rejection previously made in this case. Upon filing appellants' brief, the Examiner withdrew all previous rejections based only upon the prior art and applied art rejections based on newly cited art. Appellant has chosen to proceed with the Appeal and this Substitute Brief is being filed to respond to these new rejections, which are really no more pertinent than those previously applied. Therefore the claims before the Board are as newly rejected.

APPELLANTS' INVENTION

Appellants' invention related to a control for a vehicle internal combustion engine that protects the vehicle transmission from possible damage when a shaft experiences an acceleration of a magnitude that could cause potential damage. This is done by reducing the engine power to a level where the transmission will be safe and to a control method for achieving the same purpose. Most importantly this is accomplished by a very simple low cost method and apparatus based only on the output of a single sensor. As a specific embodiment the transmission protection eliminates clutch chattering and the claims directed to this specific protection have been allowed.

In accordance with both the apparatus and method the shaft acceleration is determined by measuring the shaft speed for a portion of a single rotation. This is compared with a measurement of shaft speed at another time such as during the complete revolution during which the partial revolution is measured or on a successive revolution. Thus this transmission protection control is achieved using no more than the single sensor arrangement normally utilized for only spark timing control based on a determination of crankshaft rotational position.

The embodiments are described in full detail under the appropriate heading in the specification of the application by reference to the figures thereof.

ISSUES BEFORE THE BOARD

The several issues before the Board in this appeal are:

1. Is the subject matter of claims 1-3, 5-9 and 11 anticipated under 35 USC 102(b) by US Patent 5,681,239 (Toukura)?
2. Is the subject matter of claims 1-3, 5-9 and 11 anticipated under 35 USC 102(e) by US Patent 6,343,586 (Muto et al)?
3. Inherent in resolving Issues 1 and 2 the Board must decide if references that perform a different function by the same result but using considerably different apparatus and much more complicated structure can be considered an anticipation where the result performed by the complicated structure and methodology might speculatively also perform the claimed function?
4. Is the subject matter of claim 4 obvious under 35 USC 103(a) from Toukura in view of US Patent 5,086,741 (Nakamura et al)?
5. Is the subject matter of claim 4 obvious under 35 USC 103(a) from Muto et al in view of Nakamura et al?
6. Is the subject matter of claims 1-9, 11 and 13-20 obvious under the judicially created doctrine of double patenting in view of US Patent 6,701,893 that has issued on co-pending application Serial Number 10/064,507?
7. Should an Examiner be allowed to express both prior art rejections and also double patenting rejections without requesting reexamination of the patent upon which the double patenting rejection is based?

The Board may not want to address this last point, but it is believed within its province of dealing with the propriety of Examiner's rejections.

GROUPING OF THE CLAIMS

The only claims that stand or fall together are claims 1 and 7. The patentability of that group and all other claims will be argued separately.

APPELLANTS' ARGUMENTS

Dealing first with the rejections under 35 USC 102, as the Board well knows, this normally would require only a reading of the rejected claim on the reference. However, in this case it is believed that the Board should consider more than that in deciding this question. As addressed in the Issues Before The Board, question 3 appellant's attorney would like to first point out that the functions performed by each of the primary references to Toukura and Muto et al, although both perform the same function, it is substantially different than that performed by appellant.

Specifically each of the primary references is designed to prevent passenger discomfort caused by varying torque output of the engine under certain acceleration of the vehicle which is caused by "the vehicle to oscillate in a forward/backward direction" (Toukura Column 1, lines 17-20) or "the acceleration fluctuates at the time of acceleration of the vehicle causes vibration" (Muto et al Column 1 lines 33-35). Appellant's invention prevents transmission damage due to excessive acceleration not varying torque. That is the functions of appellant and the references is quite different in that the references smooth out variations in torque on acceleration while appellant restricts and prevents excessive torque.

In addition and as discussed above, appellant accomplishes his result by using only a single sensor and one that is normally employed to determine shaft rotational position. The references, on the other hand, use this same sensor, but only to determine shaft angle, the normal use for this sensor. In order to achieve their intended purpose the require a form of acceleration sensor. Toukura either senses the speed of depression of the gas pedal or an actual vehicle acceleration sensor. His system will not work without this. In a like manner, Muto et al also utilizes the same vehicle acceleration sensors. Thus not only is the function of appellant's device different from the references, but the structure for accomplishing the result is not only different but also much simpler.

As noted above, however, we must look to the wording of the rejected claims to see if there is in fact anticipation. Therefore appellant will set out the language of each so rejected claim and underline the limitations that find no response in either the Toukura or Muto et al references.

> 1. A vehicle transmission system protection by engine control method for a vehicle in which rotation of an internal combustion engine is transmitted to a driven wheel through a transmission system, said method comprising the steps of detecting during engine acceleration variations in the rotational state of a shaft, determining if the degree of change in rotational state variation is excessive and will cause difficulties in the transmission system, and restricting engine output if the degree of change in rotational state of a shaft is excessive.

The Examiner alleges that Toukura measures variations in engine speed and points to Column 5 lines 8+ for support. However this refers to measuring vehicle acceleration and as already mentioned this action is performed by a form of acceleration sensor not changes in engine speed.

On the other hand Muto et al does measure engine speed variations but to form a basis for torque measurements and to minimize variations in that value not to prevent an excess of torque. Again the Board's attention is respectfully directed to the quite different functions performed by appellant and the art relied upon by the Examiner.

Claim 2 still further distinguishes as set out below:

> 2. A vehicle transmission system protection by engine control method for a vehicle as set forth in claim 1 wherein the degree of change in rotational state of the engine rotational state is determined by measuring shaft speed on successive rotations.

The Examiner has failed to even attempt to read this limitation on either reference and indeed he can not do so.

Claim 3 additionally distinguishes as set out below:

> 3. A vehicle transmission system protection by engine control method for a vehicle as set forth in claim 1 wherein the degree of change in rotational state of the engine rotational state is determined by measuring shaft speed during a portion of shaft rotation during successive cycles.

The Examiner alleges that this is inherent, but that is not true. Generally engine speed is measured by determining the time it takes for a complete revolution.

The distinctions of claim 5 are set out below:

> 5. A vehicle transmission system protection by engine control method for a vehicle as set forth in claim 1 wherein the degree of change in rotational state of the engine rotational state is both degree of rotational variation and rotational acceleration.

Again the Examiner has failed to even attempt to read this limitation on either reference and indeed he can not do so.

Claim 6 differs as follows:

> 6. A vehicle transmission system protection by engine control method for a vehicle as set forth in claim 1 wherein the degree of change in rotational state of the engine rotational state is determined by measuring the time interval during a fixed degree of shaft rotation and for a complete rotation including the measured fixed degree of shaft rotation.

Again the Examiner has failed to even attempt to read this limitation on either reference and indeed he can not do so.

Claim 7 stands or falls with claim 1.

The distinctions of claim 8 are set out below:

> 8. A vehicle transmission system protection by engine control method for a small vehicle as set forth in claim 7, wherein spark timing is changed by a time set in a timer.

Again the Examiner has failed to even attempt to read this limitation on either reference and indeed he can not do so.

The distinctions of claim 9 are as follows:

> 9. A vehicle transmission system protection by engine control method for a small vehicle according to claim 7, wherein the change of spark timing is feedback controlled such that acceleration of engine revolution will not exceed a set value.

Again the Examiner has failed to even attempt to read this limitation on either reference and indeed he can not do so.

Claim 11 is a method claim and recites in essence the same distinctions as claim 1. However because of the difference between method and apparatus, this claim does not stand or fall with that claim.

Claim 4 is rejected under 35 USC 103 on the combination of either of the basic references to Toukura or Muto et al in combination with Nakamura et al. This claim depends on claim 3 which, as has been discussed above, deals with the shaft speed measurement during a portion of a shaft rotation on successive cycles, something not disclosed in either basic reference. Claim 4 specifies that the successive cycles utilized are the compression and exhaust cycles. These have been found by appellants

to be two specific cycles where the speed variation is very reliable in determining excessive acceleration. Not only do the references fail to relate to speed measurements on successive cycles, their control is for totally different reasons. The secondary reference can not and does not cure this defect.

Now the rejection which appellants attorney takes the most offense with will be discussed, that of obviousness type double patenting. Where such a rejection is heaped upon an art rejection, it would invite a challenger to the earlier patent to state that the art rejections apply to it. There can actually be no alternative. The MPEP has several sections that deal with full faith and credit, but they all refer to subsequent actions in the same case. However it is submitted that the same should apply here. Assuming, however, that the Board, as appellants hope, will reverse those art rejections on their merit, appellants will discuss this ground of rejection. It is admitted that the method and apparatus here utilizes an inventive concept as disclosed in the earlier patent, that does not mean that other inventors of a common assignee can not make an invention in utilizing the same principle to solve a totally different problem. In fact most inventions apply previous features to solve different problems. This does not mean that all uses of the underlying principal are unpatentable.

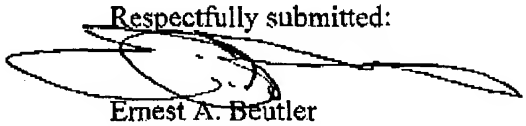
The earlier patent relates to control of wheel slippage, but this quite a different problem than transmission and specifically clutch control. However in that earlier case, the Examiner cited the art relied upon here and thus it is submitted that a rejection on art the earlier Examiner felt correctly was overcome itself should cause the Board to reverse the art rejections applied here.

The Board's attention is also directed to the fact that the Examiner has indicated that claim 12 is allowable and has not been rejected on the double patenting basis even though claims 13-20 which depend on claim 12 have.

In view of the foregoing the Board is most respectfully requested to reverse all grounds of rejection applied by the Examiner.

Since the Brief fee has already been paid in this case, none is now due.

Respectfully submitted:



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APPENDIX
CLEAN COPY OF CLAIMS ON APPEAL

1. A vehicle transmission system protection by engine control method for a vehicle in which rotation of an internal combustion engine is transmitted to a driven wheel through a transmission system, said method comprising the steps of detecting during engine acceleration variations in the rotational state of a shaft, determining if the degree of change in rotational state variation is excessive and will cause difficulties in the transmission system, and restricting engine output if the degree of change in rotational state of a shaft is excessive.

2. A vehicle transmission system protection by engine control method for a vehicle as set forth in claim 1 wherein the degree of change in rotational state of the engine rotational state is determined by measuring shaft speed on successive rotations.

3. A vehicle transmission system protection by engine control method for a vehicle as set forth in claim 1 wherein the degree of change in rotational state of the engine rotational state is determined by measuring shaft speed during a portion of shaft rotation during successive cycles.

4. A vehicle transmission system protection by engine control method for a vehicle as set forth in claim 3 wherein the successive cycles are a compression cycle and an exhaust cycle in a four cycle engine.

5. A vehicle transmission system protection by engine control method for a vehicle as set forth in claim 1 wherein the degree of change in rotational state of the engine rotational state is both degree of rotational variation and rotational acceleration.

6. A vehicle transmission system protection by engine control method for a vehicle as set forth in claim 1 wherein the degree of change in rotational state of the engine rotational state is determined by measuring the time interval during a fixed degree of shaft rotation and for a complete rotation including the measured fixed degree of shaft rotation.

7. A vehicle transmission system protection by engine control method for a vehicle claim 1 wherein the engine output is varied by changing the spark timing.

8. A vehicle transmission system protection by engine control method for a small vehicle as set forth in claim 7, wherein spark timing is changed by a time set in a timer.

9. A vehicle transmission system protection by engine control method for a small vehicle according to claim 7, wherein the change of spark timing is feedback controlled such that acceleration of engine revolution will not exceed a set value.

11. A vehicle comprised of an internal combustion engine, a transmission system driven by said engine, a driven wheel driven by said transmission system and an engine control for detecting during engine acceleration variations in the rotational state of a shaft, determining if the degree of change in rotational state variation is excessive and will cause difficulties in the transmission system, and restricting engine output if the degree of change in rotational state of said shaft is excessive.

12. (Allowed) A vehicle as set forth in claim 11 wherein the transmission system comprised of a clutch and a transmission and the avoided undesirable transmission system condition is clutch chattering.

13. A vehicle as set forth in claim 12 wherein the engine control determines the degree of change in rotational state of the engine rotational state by measuring shaft speed on successive rotations.

14. A vehicle as set forth in claim 12 wherein the engine control determines the degree of change in rotational state of the engine rotational state by measuring shaft speed during a portion of shaft rotation during successive cycles.

15. A vehicle as set forth in claim 14 wherein the successive cycles are a compression cycle and an exhaust cycle in a four cycle engine.

16. A vehicle as set forth in claim 12 wherein the engine control determines the degree of change in rotational state of the engine rotational state is both degree of rotational variation and rotational acceleration.

17. A vehicle as set forth in claim 12 wherein the engine control determines the degree of change in rotational state of the engine rotational state by measuring the time interval during a fixed degree of shaft rotation and for a complete rotation including the measured fixed degree of shaft rotation.

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18. A vehicle as set forth in claim 17 wherein the engine output is varied by changing the spark timing.

19. A vehicle as set forth in claim 18 wherein the spark timing is changed by a time set in a timer.

20. A vehicle as set forth in claim 18 wherein the spark timing is feedback controlled such that acceleration of engine revolution will not exceed a set value.